

University Guide to NASA

1993

A guide for
faculty members,
students, and
others interested
in learning
more about
the NASA
organization.

(NASA-EP-287) UNIVERSITY GUIDE TO
NASA, 1993 (NASA) 56 p

N93-22383

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G3/12 0153279

Office of Human Resources and Education
Education Division \

UNIVERSITY GUIDE TO NASA
1993

UNIVERSITY GUIDE TO NASA

This booklet was prepared by the Office of Human Resources and Education, Education Division, Higher Education Branch, for use by faculty members, students, and others interested in learning more about the NASA organization.

Comments concerning the information outlined in this brochure may be directed to:

Editor

**University Guide to NASA
Higher Education Branch
Mail Code FEH
NASA Headquarters
Washington, DC 20546**

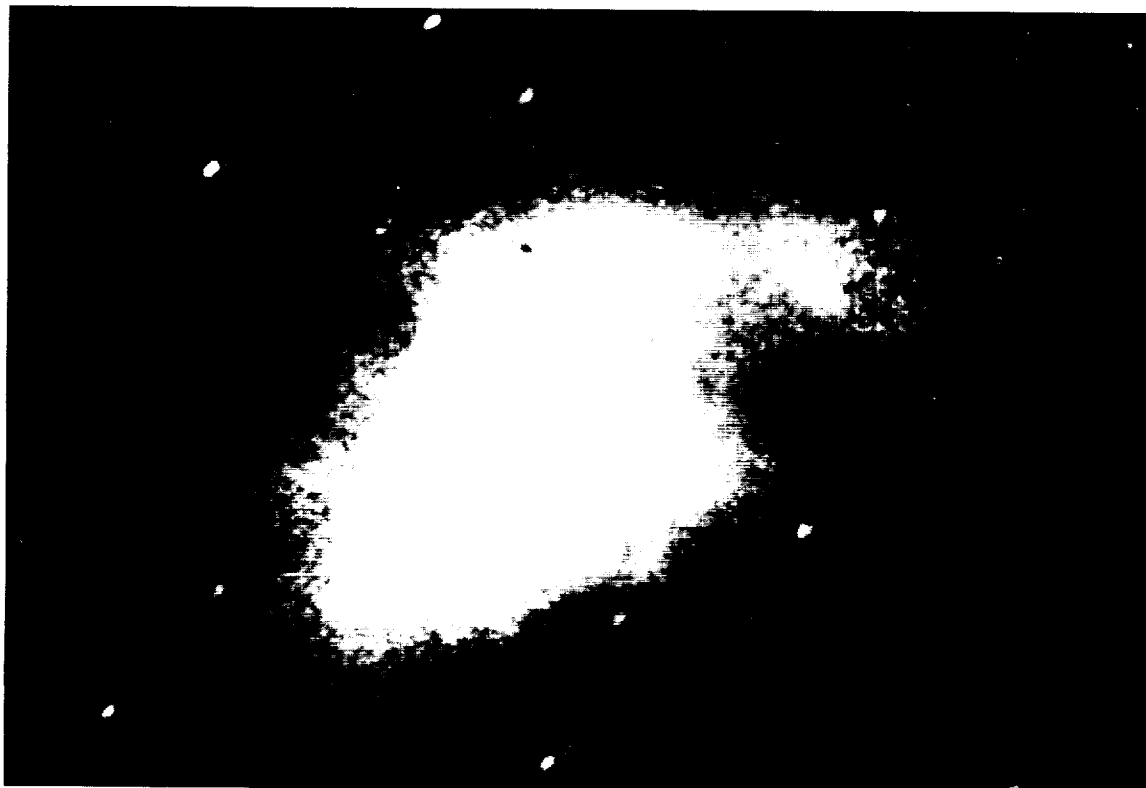
Notice

At the time this publication went to press, NASA Headquarters was undergoing reorganization and moving personnel to new quarters. As a result, telephone numbers for Headquarters personnel will change as offices are relocated. As numbers are disconnected, however, new numbers will be available by recordings, or through NASA's main number, (202) 358-0000.

Although NASA personnel are relocating to 300 E Street, SW, Washington, DC, the NASA mailing address will remain the same:

**NASA Headquarters
Mail Code:
Washington, DC 20546**

This ultraviolet image of the Crab Nebula was obtained by NASA's Ultraviolet Imaging Telescope (UIT) during the Astro-1 mission of Space Shuttle Columbia, December 2-11, 1990. The Crab Nebula is the rapidly expanding remains of a supernova (or exploding star) whose detonation was witnessed by medieval astronomers in the Orient and the Middle East in July 1054.



National Aeronautics and Space Administration

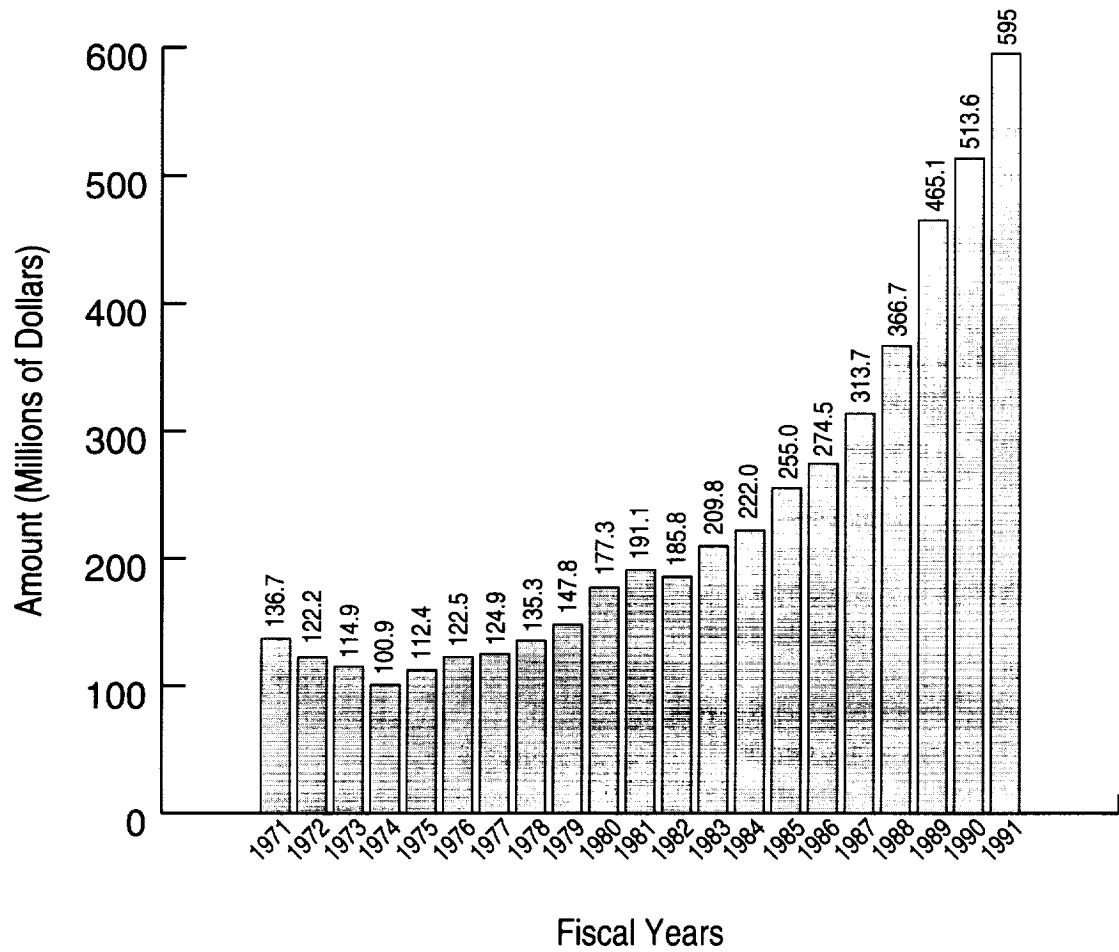
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NASA Obligations to Universities

Fiscal Years 1971-1991



Note: Excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

FY 1971 includes \$15.0M in awards to Draper Lab.

FY 1972 includes \$5.7M in awards to Draper Lab.

FY 1973 includes \$5.2M in awards to Draper Lab.

In FY 1974 Draper Lab status changed from 'university' to 'nonprofit.'

INTRODUCTION

On October 1, 1958, the U.S. Congress created, through the Space Act, the National Aeronautics and Space Administration (NASA). The legislative body combined a handful of military space research programs with the existing National Advisory Committee for Aeronautics (NACA) and created a unique civilian agency "to plan, direct, and conduct aeronautical and space activities." NASA is the Federal agency ultimately responsible for all phases of aeronautical and space programs for peaceful purposes.

Since its inception, NASA has maintained a strong, progressive relationship with the nation's academic community, supporting aeronautics and space-related research and education at colleges and universities throughout the country. The NASA-university partnership has yielded substantial accomplishments in aeronautics and space-related science and technology. This ongoing collaboration is essential if the U.S. is to continue its leadership role in aeronautics and space-related research and development (R&D). In fact, NASA's relationship with the academic research community continues to broaden and expand.

In fiscal year 1991 NASA obligated \$595.4 million to colleges and universities. Because of the size and complexity of NASA's university commitment, students and faculty have indicated a need for more information on NASA research and education programs and guidance on how to take advantage of these and other resources. This guide is designed to assist the academic community in better understanding and accessing NASA.

The "University Guide to NASA" provides brief descriptions of the two Headquarters program offices through which NASA primarily funds universities, the Office of Space Science and Applications and the Office of Aeronautics and Space Technology. It also describes NASA's Office of Commercial Programs, which funds the Centers for the Commercial Development of Space and the Small Business Innovation Research Program. This guide explains the roles played by NASA's eight field centers and the Jet Propulsion Laboratory, and gives a sampling of ongoing NASA-wide educational programs and services. Most important, this guide provides practical information in the form of names and telephone numbers of NASA contacts. This booklet is intended for use by all students, faculty, administrators, and others at colleges and universities interested in broadening their understanding of and participation in NASA programs and activities.

It is worth noting that, while this booklet attempts to outline programs and resources in a manner easily understood by those new to NASA, faculty and students with limited NASA affiliations may find it most useful to contact the NASA Field Center University Affairs Officer (UAO) when first attempting to "get around" NASA. The UAO usually can refer inquiries to the appropriate organization. UAO names, addresses and telephone numbers are located in Appendix A. In addition, telephone numbers for University Affairs Offices are listed in the section describing NASA field centers, along with Public Affairs/Information Offices. Personnel in both offices can provide information on NASA programs, resources, publications, and activities.

NASA PROGRAM OFFICES

NASA research at universities is directed primarily by two Headquarters program offices, the Office of Space Science and Applications (OSSA) and the Office of Aeronautics and Space Technology (OAST). Due to the nature of scientific research and technology development, OSSA and OAST programs are managed in different ways.

OSSA, which oversees from NASA Headquarters the agency's scientific research, has a centralized management structure. (Internally, OSSA is referred to as Code S.) Proposals are forwarded to Headquarters where they are

evaluated through outside peer reviews and selected for funding by Headquarters.

OAST conducts the agency's aeronautics program through the three NASA research centers for which it has institutional responsibility—Langley, Lewis, and Ames—and conducts the space technology program through these and the remaining centers. OAST operates under a decentralized management structure.

(Internally, OAST is referred to as Code R.)

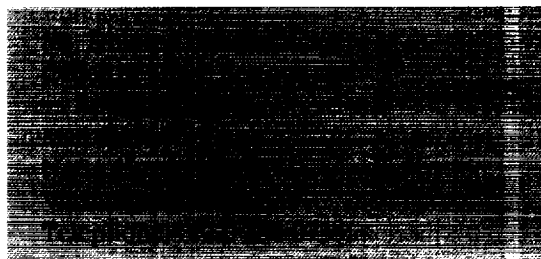
Proposals are submitted to the appropriate OAST center, where they are merit reviewed and, if selected, funded through the field centers themselves.

OFFICE OF SPACE SCIENCE AND APPLICATIONS (OSSA)

OSSA is responsible for the portion of the NASA program directed toward: scientific investigations of Earth, solar systems and astronomical objects using ground-based, airborne and space techniques; scientific experiments conducted by and on humans in space; and for directing the NASA scientific portion of the Spacelab and Space Station programs. OSSA is concerned with the following science disciplines: astrophysics, Earth science and applications, life sciences, microgravity science and applications, planetary science, astronomy, and space physics. While science research takes place at all field centers, OSSA has institutional

responsibility for Goddard Space Flight Center and the Jet Propulsion Laboratory, NASA's primary science centers.

For more information:



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OFFICE OF AERONAUTICS AND SPACE TECHNOLOGY (OAST)

OAST provides opportunities to university researchers in areas of advanced technology in aeronautics and space. OAST conducts a wide range of aeronautics programs including: fundamental research in aerodynamics, materials, and propulsion; flight tests with advanced aircraft; and efforts to improve safety in the nation's airspace. OAST manages NASA's part of the X-30 National Aerospace Plane (NASP) program, a national endeavor to develop a single-stage-to-orbit flight research vehicle. OAST also oversees technology research to bolster the nation's leadership in the engineering aspects of near-Earth human space flight and

solar system exploration. Key programs include research on a next-generation High-Speed Civil Transport, aerospace human factors, and automation and robotics. In addition, OAST manages NASA's participation in the interagency High Performance Computing and Communications Program.

For more information, contact the UAO at the center(s) of interest. The telephone number for each center University Affairs Office follows. UAO names, addresses, and telephone numbers are found in Appendix A.

OFFICE OF COMMERCIAL PROGRAMS (OCP)

OCP supports space-related research in areas of commercial interest to the private sector, including communications, remote sensing, materials processing, biotechnology, automation and robotics, space power, space propulsion, and space structures. OCP (known internally as Code C) conducts the majority of its research through the Centers for the Commercial Development of Space (CCDS), nonprofit consortia of industry, academic, and government institutions. For information on

the CCDS program, see page 22. OCP also manages NASA's Small Business Innovation Research (SBIR) Program. NASA reserves a portion of the agency's total R&D budget for awards to U.S. small businesses. Proposals are solicited annually on a broad range of NASA research topics, and though contract awards must go to small businesses, contract relationships with universities and university personnel are encouraged. For information on the SBIR Program, see page 23.

NASA FIELD CENTERS

Each NASA field center conducts a variety of programs specializing in aeronautics and space-related research and development activities relevant to the NASA mission. The follow-

ing section describes these activities and lists the University Affairs and Public Affairs/Information Offices at each center.

AMES RESEARCH CENTER

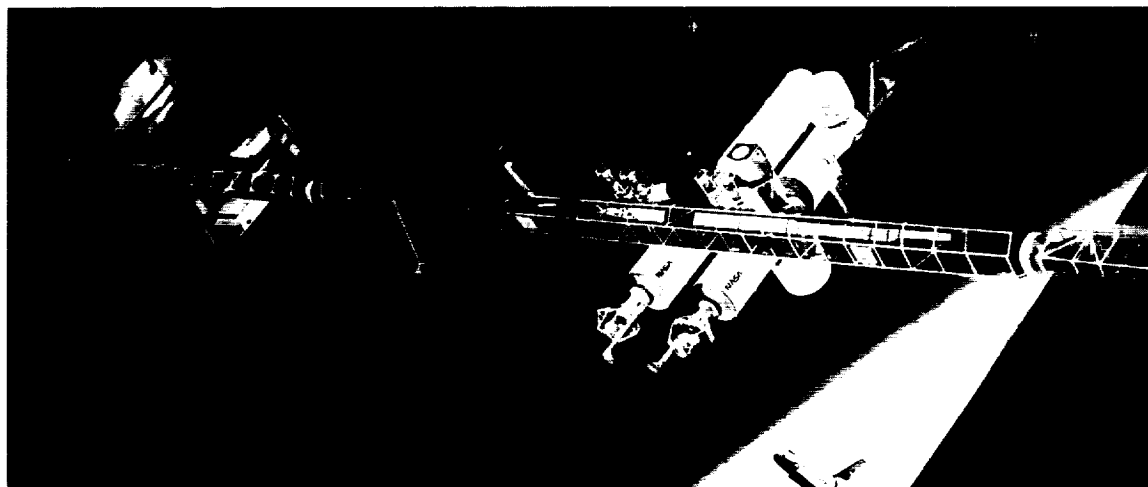
Ames Research Center (ARC) was founded in 1939 by NACA, the organization preceding NASA, and became part of NASA in 1958. ARC is located south of San Francisco at Moffett Field, California, and is active in computer science and applications, computational and experimental aerodynamics, flight simulation, flight research, hypersonic aircraft, rotorcraft and powered-lift technology, aeronautical and space human factors, life sciences, space sciences, solar system exploration, airborne science and applications, and infrared astronomy. The world's largest wind tunnel is located here, as is the world's most powerful supercomputer system, used for computational analyses ranging from aircraft design to astrophysics. ARC

manages the Dryden Flight Research Facility at Edwards Air Force Base, California. Since the 1940s, this Mojave desert site has been a testing ground for high-performance aircraft and is one of two prime landing sites for the Space Shuttle.

For more information:



The concept of the space station goes back to at least 1869 when Edward Everett Hale mentioned in the Atlantic Monthly the "Brick Moon," a 200-foot diameter satellite to help navigate ships at sea.



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GODDARD SPACE FLIGHT CENTER

Goddard Space Flight Center (GSFC) is named for Dr. Robert H. Goddard, the father of American rocketry, and is located outside Washington, D.C., in Greenbelt, Maryland. GSFC was NASA's first major scientific laboratory devoted entirely to the exploration of space and presently has the largest scientific staff of the NASA centers. GSFC's primary focus is Earth and space sciences, and the design, fabrication, and testing of scientific satellites that survey Earth, the sun, and the universe. Since its opening in 1959 through 1990, GSFC has managed and launched 154 Earth-orbiting scientific satellites. GSFC personnel monitor and control the International Ultraviolet Explorer (IUE) launched in 1978; the Cosmic Background Explorer (COBE) launched in November 1989; the Hubble Space Telescope (HST) launched in April 1990; and the

Compton Gamma Ray Observatory (GRO) launched in April 1991. GSFC will also take the lead in the Earth Observing System (EOS) portion of the Mission to Planet Earth projects. GSFC includes the Wallops Flight Facility at Wallops Island, Virginia.

For more information:

NASA Goddard Space Flight Center
Greenbelt Road
Greenbelt, MD 20771
Main number: (301) 286-2000
University Affairs Office:
(301) 286-9690
Public Affairs Office: (301) 286-6255

JET PROPULSION LABORATORY

The Jet Propulsion Laboratory (JPL) is located approximately 20 miles northeast of Los Angeles near Pasadena, California, and is operated under contract to NASA by the California Institute of Technology. JPL's primary focus is the scientific study of the solar system, including exploration of the planets with automated probes. Most of the early lunar and planetary spacecraft were developed at JPL, including the Voyagers that have explored the giant planets of the outer solar system. Among JPL's active flight programs are the Galileo mission to Jupiter, the Magellan mission to Venus, the Ulysses project to study the sun, the Mars

Observer Mission, and the Cassini mission to study Saturn.

For more information:

Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109
Main number: (818) 354-4321
University Affairs Office:
(818) 354-8251
Public Information Office:
(818) 354-5011

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LYNDON B. JOHNSON SPACE CENTER

Johnson Space Center (JSC), located between Houston and Galveston, Texas, is the lead center for NASA's piloted space flight program. JSC was established in 1961 as NASA's primary center for design, development, and testing of spacecraft and associated systems for piloted flight and has been "Mission Control" for all piloted space flights since Gemini 4 in 1965. JSC has responsibility for the selection and training of astronauts and plays a primary role in the medical, engineering, and scientific experiments carried aboard space flights. JSC manages the Space Shuttle program and has major responsibility for the development of elements of Space Station *Freedom*, a permanently habited, Earth-orbiting facility. JSC is responsible for the White Sands Test Facility at Las Cruces, New Mexico, where testing is done on Space Shuttle and Space Station power and propulsion systems, materials, components, and subsystems.

JSC's life and space sciences laboratories devote research to life sciences, planetary and Earth sciences, robotics, artificial intelligence, and lunar samples. Engineering facilities include vacuum chambers, an anechoic chamber, antenna range, avionics testing, and various structural and environmental test areas.

For more information:

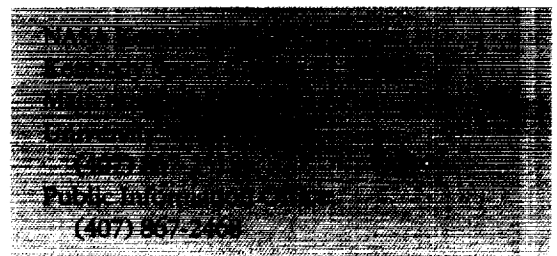


JOHN F. KENNEDY SPACE CENTER

Kennedy Space Center (KSC), located near Cape Canaveral, Florida, and occupying an area of 140,000 acres, is NASA's primary launch site. KSC manages the assembly, integration, and checkout of the Space Shuttle elements; assembly, integration, and checkout of payloads including Spacelab, Space Station, and upper stages; and conducts launch, recovery, landing operations, and preparation for the next mission for the Space Transportation System. KSC is also responsible for the design, development, construction, and maintenance of launch, recovery, and landing facilities and ground support equipment required to process launch vehicle systems and their associated payloads. This center also manages the Orbiter flight hardware logistics and provides government oversight for commercial launches of NASA payloads on both coasts. All piloted

space missions beginning with the Mercury program have been launched at KSC-managed facilities. This includes Gemini, Apollo, Skylab, and Space Shuttle flights. Applied research related to these functions is conducted through university and industrial contracts and grants.

For more information:



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LANGLEY RESEARCH CENTER

Langley Research Center (LaRC) in Hampton, Virginia, was established by NACA in 1917 as the Langley Memorial Aeronautical Laboratory. Langley's primary mission is basic research in aeronautics and space technology. Major research fields include aerodynamics, materials, structures, flight controls, information systems, acoustics, aeroelasticity, atmospheric sciences, and nondestructive evaluation. LaRC researchers use more than 40 wind tunnels to study improved aircraft and spacecraft safety, performance, and efficiency. Programs currently underway include developing technology for the joint NASA/Department of Defense National Aerospace Plane. Researchers study atmospheric and Earth sciences, develop tech-

nology for advanced space transportation systems, conduct research in laser energy conversion techniques for space applications, and provide the focal point for design studies for large space systems technology and Space Station activities.

For more information:

NASA Langley Research Center
Hampton, VA 23665
Main number: (804) 864-1000
University Affairs Office:
(804) 864-4000
Public Affairs Office: (804) 864-6121

LEWIS RESEARCH CENTER

Lewis Research Center (LeRC), established in 1941, is located outside Cleveland, Ohio, and conducts research in aeronautics and space technology, including work on advanced materials and structures for aircraft. LeRC is NASA's lead center for research, technology, and development in aircraft propulsion, space propulsion, space power, and satellite communications. LeRC engineers explore chemical, nuclear, and electric propulsion systems. Specialized facilities at LeRC include a Microgravity Materials Science Laboratory used to qualify experiments for space flight, and a zero-gravity drop tower that simulates weightlessness for short periods. Other facilities include wind tunnels, space tanks, chemical rocket thrust stands, and chambers for testing jet engine efficiency. LeRC has responsibility

for developing the largest space power system ever designed to provide the electrical power necessary to accommodate the life support systems and research experiments to be conducted aboard the Space Station.

For more information:

NASA Lewis Research Center
21000 Brookpark Road
Cleveland, OH 44135
Main number: (216) 433-4000
University Affairs Office:
(216) 433-2956
Media Relations Office:
(216) 433-2899

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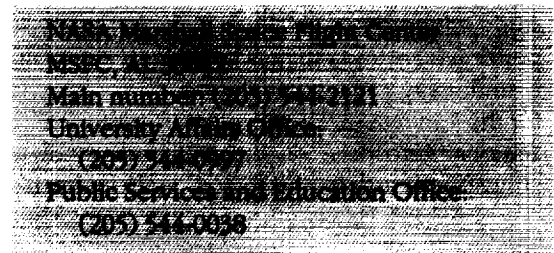
GEORGE C. MARSHALL SPACE FLIGHT CENTER

Marshall Space Flight Center (MSFC) is located inside the U.S. Army's Redstone Arsenal at Huntsville, Alabama. Marshall began in 1960 as NASA's developer of propulsion systems and launch vehicles but, over the years, its initiative has broadened to include many other science and engineering areas. Now, almost all of the scientific experiments on board the human space flight missions are designed, constructed, and operated by Marshall. Among its major successes are the giant Saturn launch vehicle, Skylab, the Space Shuttle propulsion systems, Spacelab, and the Hubble Space Telescope (HST).

Scientists and engineers at MSFC are currently developing the Advanced X-ray Astrophysics Facility, and are managing the development of the Advanced Solid Rocket Motor (ASRM),

planned to replace the current Shuttle Redesigned Solid Rocket Motors. Marshall has the responsibility for developing the habitation and laboratory modules of Space Station *Freedom*. Other MSFC initiatives include the development of the New Launch System that will lift larger payloads.

For more information:

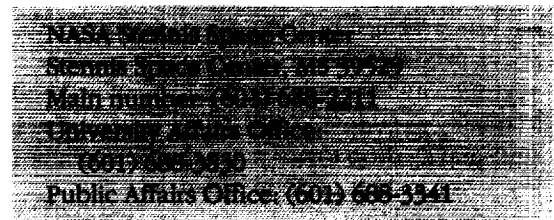


JOHN C. STENNIS SPACE CENTER

Stennis Space Center (SSC) on Mississippi's Gulf Coast is NASA's premier center for testing large rocket propulsion systems for the Space Shuttle and the ASRM programs. In addition, SSC is NASA's lead center for space remote sensing commercialization through its Science and Technology Laboratory, where researchers work to develop and advance new technology for observing Earth and its resources. The lab's scientific and technical personnel work in such fields as mathematical modeling, forestry, geology, urban geography, and archaeology. SSC is unique in NASA in that it also serves as host to 18 other Federal and state agencies and univer-

sity personnel in residence involved primarily in environmental and oceanographic programs.

For more information:



SOURCES OF INFORMATION ON NASA RESEARCH

NASA RESEARCH ANNOUNCEMENTS AND ANNOUNCEMENTS OF OPPORTUNITY

NASA periodically issues broad agency announcements, of which NASA Research Announcements (NRAs) and Announcements of Opportunity (AOs) are the primary instruments. Ninety-five percent of NRAs and AOs are issued by OSSA. (A good way to access NRAs, AOs, and other agency announcements is through the Federal Information Exchange, Inc. [FEDIX]. FEDIX is an on-line service providing information on government research and education-related programs. See the section immediately following.)

An NRA is used to announce NASA's research interests and to solicit proposals for funding. An NRA provides for the submission of competitive project ideas in one or more program areas of interest to NASA. NRAs are used to address opportunities for basic and applied research that occur on a continuing basis and may include ground-based experimentation and observations, data analysis and theoretical studies, advanced technology development, suborbital flight experiments, or use of space research facilities which are made available to users on a series of repeated flights.

An AO is used to announce NASA's research interests to be derived from investigations

flowed on NASA missions and to solicit and select proposals for funding. AOs tend to address unique flight opportunities and do not generally go forward on a continuing basis. Due to the constraint of limited NASA missions, a key objective of the AO process is the selection of a group of investigations which represent an integrated payload or a well-balanced program of investigation which has the best possibility for meeting NASA's announced scientific, applications, and/or technological research objectives.

NRAs and AOs are published in the *Commerce Business Daily* and mailed to individuals and organizations.

For more information on NRAs and AOs or to be placed on the OSSA mailing list:

Ms. Mary Ann Gaskins
Office of Space Science and
Applications
Mail Code SPS
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-2132

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FEDIX

NASA is among a number of federal agencies participating in the Federal Information Exchange, Inc. (FEDIX), an on-line service providing information on government research and education programs. FEDIX may be accessed via telephone lines by anyone using a computer with a modem. There are no registration fees and no access charges for using the system.

FEDIX databases provide information on federal government education, and research and development programs; education and/or research-related agency contacts; scholarships,

fellowships, and grants; available used government research equipment; new funding for research and educational activities from the *Commerce Business Daily*, *Federal Register* and other sources; agency history, budget, organizational structure, and mission statements; and current events within participating agencies.

For more information:

Call 1-800-725-5445
Telephone: (800) 975-0103

RESEARCH AND TECHNOLOGY OBJECTIVES AND PLANS SUMMARY

Each fiscal year NASA publishes, for limited distribution, its research and technology program for that year. The Research and Technology Objectives and Plans (RTOP) Summary is designed to facilitate communication and coordination among concerned technical personnel in government, industry, and universities, to eliminate duplicative efforts. Information in the RTOP Summary is arranged in five sections. Section 1 contains citations and summaries of proposed research projects. The remaining four sections are arranged by subject, technical monitor, responsible NASA organization, and RTOP number.

The RTOP Summary is available at no charge and is an excellent way for university investiga-

tors to obtain information on NASA research objectives and to identify key NASA personnel with whom to discuss projects.

For more information:

Call 1-800-725-5445
or
Telephone: (800) 975-0103
or
NASA Center UNOY

RESEARCH AND TECHNOLOGY REPORTS

Each NASA facility publishes an annual report highlighting the preceding year's activities. The report is available at no charge to those interested in the progress and results of research projects. In addition, investigators and their telephone numbers and/or addresses are listed and may be contacted for further information on the research topic. Contact the center(s) of interest for the most recent copy of that cen-

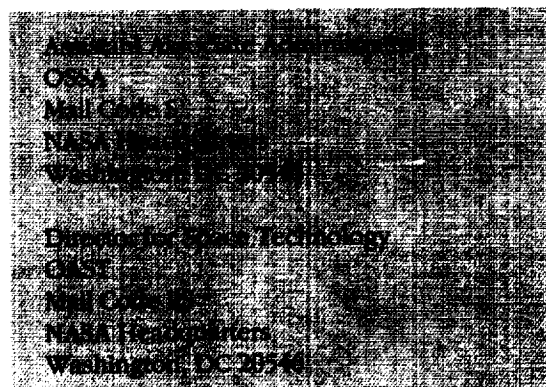
ter's Research and Technology Annual Report or to be included on the mailing list.* See Appendix B for center addresses.

*The Jet Propulsion Laboratory is managed by the California Institute of Technology. JPL publishes an annual report which is comparable to a Research and Technology Report. Contact the Public Information Office listed in Appendix B for this and other JPL publications.

OTHER PUBLICATIONS

Other helpful sources of information about NASA research and development activities are available. They include the OSSA Strategic Plan, and the OAST Integrated Technology Plan.

For more information, write:



In addition, numerous reports have been published which further describe the agency and its activities. Examples include: *Earth System Science, A Report of the Earth Systems Sciences Committee*, January 1988; the annual report of the Aerospace Safety Advisory Panel, March 1992; *Space-Based Remote Sensing of the*

Earth, A Report to the Congress, September 1987; *Exploring the Living Universe, A Strategy for Space Life Sciences*, a report of the Life Sciences Strategic Planning Study Committee, June 1988; *NASA Earth Science and Applications Division Program and Plans for FY 1988-1989-1990*, September 1988; "An Exploration of Benefits from NASA," *NASA Leadership and America's Future in Space* (Ride Report), August 1987; *Orders of Magnitude, a History of the NACA and NASA, 1915-1990*, 1989; *America at the Threshold, America's Space Exploration Initiative* (Synthesis Group), May 1991; and *Report of the Advisory Committee on the Future of the U.S. Space Program* (Augustine Report), December 1990. These and other publications may be available through the NASA Center Public Affairs/Information Offices (telephone numbers are listed in the preceding section on NASA centers) and libraries. (See Appendix G.)

In addition, the NASA Scientific and Technical Information (STI) Program offers aerospace-related reports and literature. See page 25 for more information on the STI Program.

NASA PHONEBOOKS

NASA Headquarters and field center telephone directories can be of great help in learning about the organization of NASA. To obtain a NASA Headquarters telephone directory, contact the Government Printing Office in Washington, D.C. A yearly subscription is \$14.00, but individual copies of the latest edition may be ordered for \$5.00 each. Write or call:



For information on how to obtain NASA center directories, contact the center(s) Public Affairs/Information Office directly.

GUIDANCE FOR THE PREPARATION AND SUBMISSION OF UNSOLICITED PROPOSALS

NASA depends upon the private sector—industry, educational institutions, and other nonprofit organizations—for the bulk of its research needs. Therefore, NASA funds a small percentage of unsolicited proposals* which will further the agency's mission. NASA publishes a booklet entitled "Guidance for the Preparation and Submission of Unsolicited Proposals," available through Headquarters and center personnel (Appendix C). Unsolicited proposals may be directed to NASA Headquarters, or to field centers, depending upon the nature of the proposal. Proposers unfamiliar with NASA are strongly advised to contact the field center UAO or Headquarters OSSA before writing a proposal to determine research needs. Submit proposals four to six months in advance of the desired starting date, or, for renewal or continuation proposals, well in advance of the expiration date of the award.

See Appendix C for proposal processing offices.

*The Federal Acquisition Regulation defines "unsolicited proposal" as a written proposal that is submitted to an agency on the initiative of the submitter for the purpose of obtaining a contract or other agreement with the government and which is not in response to a formal or informal request.



Researcher prepares Boeing 777 twin-jet transport model for wind tunnel tests.

National Aeronautics and Space Administration

NASA AND THE ACADEMIC COMMUNITY

At about the same time NASA began supporting research at universities, the agency used its unique mission and facilities to conduct programs which supported graduate students in space science and technology. Over the years, new programs have been added to expand the NASA-university partnership. These programs broadened not only existing opportunities in graduate education but created new and exciting ones for undergraduate students and for faculty. These efforts are directed toward ensuring a sufficient pool of qualified scientists, engineers, and technicians, as well as an educated public, which will help preserve U.S. leadership in aeronautics, space sciences, and technology.

The programs described in this section are national in scope; that is, they are managed by NASA Headquarters and implemented locally by the field centers. These programs are but a

sampling of the higher education programs managed by Headquarters offices and centers. Most field centers have brochures similar to this one describing their opportunities for universities. For information on center-based programs, contact the UAO at the center(s) of interest.

In addition, OSSA, which sponsors a variety of mission-related education programs, publishes a catalog describing that office's activities.

For more information on OSSA programs:

Ms. Cindy Buck
Policy and Plans Branch
Mail Code SPS
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-2132

EDUCATION PROGRAMS

UNDERGRADUATE STUDENT RESEARCHERS PROGRAM (UNDERREPRESENTED MINORITY FOCUS)

The Undergraduate Student Researchers Program (Underrepresented Minority Focus) is designed to increase the number of underrepresented minorities and persons with disabilities pursuing degrees in science and engineering areas compatible with NASA's mission in space science and aerospace technology. Emphasis is placed on faculty/student relationships in order that students may be inspired to pursue graduate degrees and research-related careers. Selected students receive scholarships throughout their undergraduate careers, contingent on the maintenance of a 3.0 grade point average. During the summers students conduct research relevant to

their field of study on a university campus, at a NASA installation, or at a private corporation.

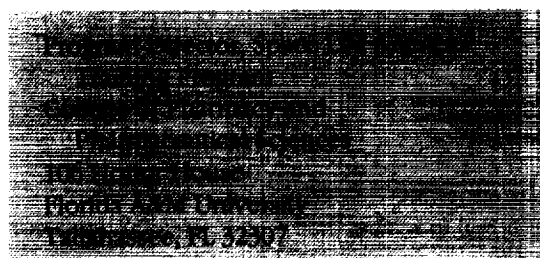
For more information:

Ms. Deborah Russell
Minority University Research and
Education Division
Mail Code EU
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-0935

SPACE LIFE SCIENCES TRAINING PROGRAM (UNDERGRADUATE STUDENTS)

The Space Life Sciences Training Program is an intensive six-week summer training course held at the Kennedy Space Center. Undergraduate college students in their sophomore, junior, or senior years who are currently enrolled in an accredited U.S. college or university and who are pursuing their first undergraduate degree in the life sciences, pre-medicine, bioengineering, or related fields are eligible to apply. Students who will complete their senior year prior to the start of the program are not eligible. The curriculum utilizes lectures, laboratory sessions with NASA investigators, special projects, and Shuttle facility tours to provide students with a complete overview of the field of space life sciences. Whenever possible, student teams participate in the actual operations of flight experiment development, processing, and analysis. During the program, students also learn about teamwork, project schedules, and special considerations in space experimentation, including the constraints of working in microgravity. The program usually is scheduled for mid-June through July each year. After the successful completion of the program, the student earns five semester hours of college credit from Florida A&M University.

Student selection is made on a nationally competitive basis. Ethnic minority students are encouraged to apply. Selection is based on a variety of factors, including grade point average, communications skills, extracurricular activities, and letters of recommendation. Applications must be postmarked by January 31 each year. Applicants will be notified of their selection status no later than March 31. Application forms and materials may be obtained from:



For more information:



OAST UNIVERSITY SPACE ENGINEERING RESEARCH CENTERS (UNDERGRADUATE/GRADUATE STUDENTS)

OAST's University Space Engineering Research Centers (USERC) Program is designed to broaden and enhance the capabilities of the nation's engineering community to meet future space technology needs. This program supports university-based research centers designed to advance both traditional engineering disciplines and interdisciplinary efforts applicable to space, bringing together the knowledge, methodologies, and engineering tools needed to advance future space systems. Centers support undergraduate and graduate students of U.S. citizenship in space engineering research tied to future NASA mission needs. In addition, centers promote the teamwork that technological system problems demand and bring individuals from a wide range of engineering and scientific fields into a single research structure. Mutually beneficial interactions between these university-based centers, other universities, various industrial

organizations, and NASA centers are encouraged.

In 1988 OAST selected nine university-based Space Engineering Research Centers. Students seeking information on a variety of opportunities to participate in this program should contact the USERC(s) of interest. For a list of centers and contact persons, see Appendix D.

For more information:

Dr. Robert J. Hayduk
USERC Program Manager
Space Research Division
Mail Code RSR
NASA Headquarters
Washington, DC 20546
Telephone: (202) 453-2962

GRADUATE STUDENT RESEARCHERS PROGRAM

The Graduate Student Researchers Program (GSRP) awards fellowships annually to students whose research in space science or aerospace technology is of interest to NASA. Fellowships are awarded by NASA Headquarters and by NASA field centers. Fellows who receive their awards from Headquarters engage in research at their home university. Those chosen by a field center spend a period of time in residence at that center utilizing its unique facilities while working with center personnel. Fellowship recipients receive an award of \$22,000 per year, renewable for up to a total of three years. Fellows must be U.S. citizens and enrolled or accepted as full-time graduate students at an accredited U.S. college or university. Interested students are encouraged to

obtain the program brochure for detailed information about current research opportunities and application procedures. The application deadline is February 1, with offers of appointment in late April.

For more information:

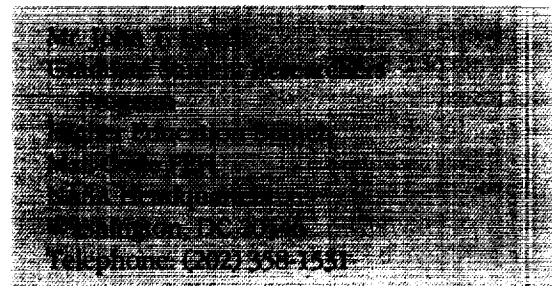
Mr. John T. Lynch
Graduate Student Researchers
Program
Higher Education Branch
Mail Code FEH
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-1531

GRADUATE STUDENT RESEARCHERS PROGRAM (UNDERREPRESENTED MINORITY FOCUS)

The GSRP was expanded in 1987 to include the Underrepresented Minority Focus (UMF) component, which is designed to increase minority participation in graduate study and research and subsequently in space science and aerospace technology careers. The implementation of this program reflects NASA's concern that minorities remain significantly underrepresented in science and engineering. Fellows receive an award of \$22,000 for the first year, renewable for up to a total of three years. Applicants must be U.S. citizens, enrolled or accepted as full-time graduate students at an accredited U.S. college or university, and be members of an underrepresented minority group. An underrepresented minority group is one whose members are not represented in science and engineering fields in proportion to their numbers in the general population. The following minorities fall into this category: African Americans, American Indians, Hispanics, and Pacific Islanders.

This program enlists the assistance of university principal investigators and graduate faculty advisors in locating promising minority graduate students. Interested students are encouraged to obtain the program booklet. Application deadline is February 1, with offers of appointment from June 1 through September 1.

For more information:



GLOBAL CHANGE RESEARCH GRADUATE STUDENT FELLOWSHIP PROGRAM

The goal of the Global Change Research Graduate Student Fellowship Program is to train the next generation of Ph.D.s in Earth science and engineering to manage data and information generated by the Earth Observing System (EOS), which supports NASA's Global Change Research Program. The EOS program is NASA's series of space platforms that will contain instruments designed to study the interaction of Earth's biological, hydrological, geological, and chemical systems and the effects of these interactions on the environment.

Students selected for participation receive a one-year fellowship of \$20,000, plus \$2,000 available by request for the faculty advisor's use in support of the student's research. Fellowships are renewable for up to three years. Students conduct research in climate and hydrologic systems, ecological systems and dynamics, solid Earth processes, and solar influences. Atmospheric chemistry and physics, ocean biology and physics, ecosystem dynamics, hydrology, cryospheric processes, geology, and geophysics are all acceptable areas of research as long as a specific research topic is

UNIVERSITY GUIDE TO NASA

NASA Boeing 737 research aircraft banks toward a "microburst" in flight test of airborne windshear sensors.



National Aeronautics and Space Administration

relevant to NASA's global change research efforts, including EOS and NASA's Mission to Planet Earth programs.

Interested full-time graduate students and seniors who have been accepted into a Ph.D. program at an accredited U.S. college or university are encouraged to obtain the program brochure for detailed information about current research opportunities. Application deadline is April 1 with offers of appointment June 30.

For more information:

Dr. Ghassem Asrar
Global Change Research Graduate
Student Fellowship Program
Earth Science and Applications
Division
Mail Code SE
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-0259

SUMMER FACULTY FELLOWSHIP PROGRAM

NASA's Education Division, Higher Education Branch, in cooperation with the American Society for Engineering Education (ASEE), awards summer fellowships to engineering and science educators. The Summer Faculty Fellowship Program is designed to further the professional knowledge of engineering and science faculty, stimulate an exchange of ideas between university faculty and NASA scientists and engineers, and contribute to ongoing research at NASA facilities. The program provides a good opportunity for faculty to establish contacts with NASA researchers and generally learn more about how to access the agency. Those selected for participation currently receive a stipend of \$1000 per week, plus travel expenses, and a relocation allowance. Fellows spend 10 or 11 weeks working at a NASA field center on aeronautics or space research, supplemented with enrichment activ-

ities such as short courses, workshops, and seminars. Faculty members must be U.S. citizens with teaching or research appointments in universities or colleges and have, preferably, two years experience. Interested persons are encouraged to obtain the program brochure for current research opportunities. Application deadline is January 15 with offers of appointment March 1.

For more information:



JOVE (FACULTY)

JOVE—Joint Venture—is a pilot program begun in 1989. Funded by NASA's OSSA and Office of Equal Opportunity Programs, the JOVE initiative makes space science research opportunities available to a broader spectrum of colleges and universities—liberal arts colleges, public and private universities of modest size, and major state and private universities throughout the United States—provided those institutions have not been significantly involved in the nation's aerospace program. Through electronic networking and other means, NASA makes research data available to JOVE faculty participants in exchange for the universities and colleges providing faculty and student time to do the research. To initiate the research project, the faculty member takes up residence at the NASA center or a selected mentor institution during the first summer of the program, typically for a 10-week period.

Participating institutions must also embark on appropriate curriculum development and outreach activities, which include the design of special courses, space science survey courses for high school students, and summer space camps at the university for teacher or student enrichment.

For more information:



RESIDENT RESEARCH ASSOCIATESHIP PROGRAM (FACULTY)

The Resident Research Associateship Program, administered for NASA's Higher Education Branch by the National Research Council (NRC), gives outstanding postdoctoral scientists and engineers an opportunity to perform research at NASA field centers. The program offers two types of associateships: (1) Regular Research Associateships, which are awarded initially for one year to those who have held a doctorate for less than five years; and (2) Senior Research Associateships, which are awarded initially for one year to those who have held a doctorate for more than five years. Both types of associateships may be renewed for a second year, and awards for less than a year may be considered for Senior Research Associates.

Those selected for participation must be in residence at the sponsoring field center during the entire period of the associateship. Associates have the status of visiting scientists or engineers during their period of tenure. Eligible are U.S. and non-U.S. citizens (in basic science areas only) who have full command of the English language. Either an Exchange Visitor or Immigrant (Permanent Resident) visa is required before tenure may begin. Awardees must hold the Ph.D., Sc.D., or other earned research doctoral degree recognized as equivalent to the Ph.D. or must present acceptable evidence of having completed all the formal academic requirements for one of these degrees before tenure can begin. Applicants must demonstrate superior ability for creative research.

Applications are reviewed three times a year, in February, June, and October. Application deadlines are December 15, April 15, and August 15, respectively. Regular Associateships begin at \$34,500 per year; Senior Associateships are appropriately higher and are based on professional experience and accomplishments. Those in the fields of engineering, computer science, and medical science (M.D.) receive an additional \$6,500. In addition, Associates receive a relocation and professional travel allowance.

For more information:

National Research Council
GR 430
2101 Constitution Avenue, NW
Washington, DC 20418
Telephone: (202) 334-1700

Most of the giant Hubble Space Telescope (HST) can be seen as it is suspended in space by Discovery's remote manipulator system (RMS), following the deployment of part of its solar panels and antennae during the STS 31 mission, April 1990.



National Aeronautics and Space Administration

OTHER UNIVERSITY OPPORTUNITIES

NATIONAL SPACE GRANT COLLEGE AND FELLOWSHIP PROGRAM

In 1987 Congress passed legislation creating the National Space Grant College and Fellowship Program, which represents a bold, sweeping commitment to maintaining this nation's preeminence in aeronautics and space science and technology. The program was initiated by Senator Lloyd Bentsen (D-TX) and modeled after the Land Grant and Sea Grant university programs. NASA, given responsibility for designing and managing the Space Grant program, developed the following objectives:

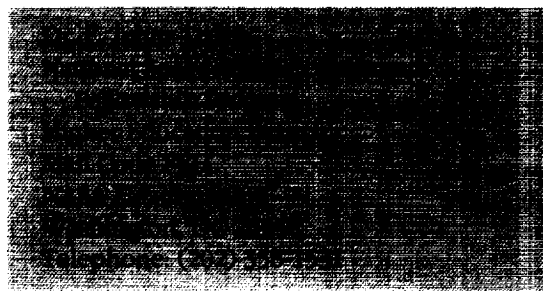
- to establish a national network of universities with interests and capabilities in aeronautics, space, and related fields;
- to encourage cooperative programs among universities, aerospace industry, and federal, state, and local governments;
- to encourage interdisciplinary training, research, and public service programs related to aerospace;
- to recruit and train professionals, especially women, underrepresented minorities, and persons with disabilities, for careers in aeronautics and space-related science and engineering; and,
- to develop a strong science, mathematics, and technology education base from elementary through university levels.

Under the Space Grant program a national network of public and private colleges and universities with varying degrees of aeronautics

and space-related resources and capabilities are joined by space-related industry, state and local governments, and nonprofit organizations. Space Grant consortia have been established in every state, the District of Columbia and Puerto Rico. Each consortium receives NASA funds to be used in implementing a balanced program of research, education, and public service.

An important component of the program is the establishment of Space Grant fellowships. Fellowship programs are administered by each consortium and are targeted to both undergraduate and graduate students with emphasis on recruiting women, underrepresented minorities, and individuals with disabilities. Persons interested in having their institutions participate in state consortia, and students seeking information on fellowships, should contact the Program Director(s) of the consortia in which they are interested.

More information and a list of Space Grant Program Directors may be obtained by writing to:



UNIVERSITY GUIDE TO NASA

ADVANCED DESIGN PROGRAM

The Advanced Design Program, managed for NASA's OAST by the Universities Space Research Association (USRA), awards grants to universities to support incorporation of advanced aeronautics or space mission topics in their senior engineering design courses. The program frequently includes students from other disciplines and involves multidisciplinary design projects where appropriate. Study topics cover a broad range of potential space and aeronautics projects. Universities selected for participation are paired with a NASA field center which provides technical guidance and other support services throughout the life of the design project. A portion of the grant is specifically targeted for the hiring of a teaching assistant, who may subsequently be awarded a summer work assignment at a field center. The program culminates each year with a summer conference where students present their com-

pleted design projects to NASA managers, aerospace industry representatives, and other participating universities. U.S. universities with an accredited aeronautics or aerospace department or equivalent are eligible to participate. Announcements of Opportunity are issued by NASA/USRA every three years.

For more information:

Dr. Vicki S. Johnson
Advanced Design Program
Universities Space Research
Association (USRA)
3600 Bay Area Boulevard
Houston, TX 77058-1115
Telephone: (713) 244-2000

HBCU PROGRAM

The Historically Black Colleges and Universities (HBCU) program was established by executive order of the President to support a variety of activities, including funding research grants, fostering training programs for undergraduate and graduate students, and implementing pre-college programs at HBCUs. The program is designed to enhance research development at HBCUs which have traditionally received little Federal research dollars, and attract promising minority students to careers in science, engineering, and technology. As part of the HBCU Program, seven universities have been selected as HBCU Research Centers. These institutions receive funds to implement research programs and provide scholarships and fellowships to chosen students. Other institutions not participating as Research Centers can become

involved through the submission of research proposals. Unsolicited proposals may be submitted to NASA field centers where they are competitively reviewed. In addition, funds for student support are awarded to selected universities.

For more information:

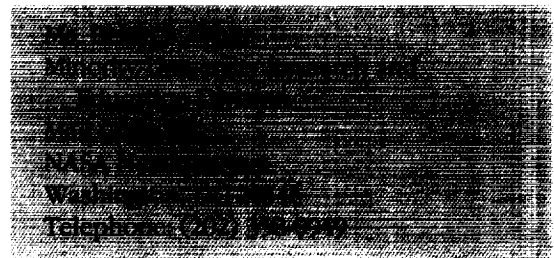
Ms. Sherree Stovall-Alexander
Minority University Research and
Education Division
Code EU
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-0973

MINORITY UNIVERSITY PROGRAM FOR OTHER UNIVERSITIES

Other Minority Universities (OMUs) are those which have significant populations of minority students or persons with disabilities. The Minority University Program for Other Universities provides opportunities for minority universities to strengthen their institutional research capabilities and for faculty at OMUs to participate in NASA's research objectives. Further, the program seeks to increase the number of individuals from underrepresented groups and persons with disabilities pursuing degrees in NASA-related disciplines. Additionally, special efforts are underway to enhance the retention and advancement of minority and disabled secondary students in mathematics-based curricula, to provide science enrichment

opportunities for in-service teachers, and to increase the number of minority and disabled students in pre-service mathematics and science teacher preparatory programs.

For more information:



CENTERS FOR THE COMMERCIAL DEVELOPMENT OF SPACE PROGRAM

The Centers for the Commercial Development of Space (CCDS) are nonprofit consortia of industrial, academic, and governmental institutions which conduct space-based, high-technology research and development in specific areas, such as material processing, biotechnology, remote sensing, automation and robotics, space power, space propulsion, space structures, and communications. NASA created the CCDS program in 1985 to maximize U.S. industrial leadership in commercial space-related activities and to increase private sector participation and investment in the commercial development of space.

At present there are 17 CCDS located throughout the United States. CCDS receive a grant from NASA which is used to leverage additional cash and in-kind contributions. Although no plans exist to establish additional CCDS, university researchers with expertise in specific areas may submit proposals to join existing ones. (CCDS directors are listed in Appendix E.) Those interested in participating in the research directed by the CCDS are urged to contact the CCDS directly for more information about ongoing projects.

SMALL BUSINESS INNOVATION RESEARCH PROGRAM

The NASA Small Business Innovation Research (SBIR) Program was established by Congress in 1982, with NASA one of 11 Federal agencies participating. SBIR helps NASA develop innovative technologies by promoting research by small businesses (defined as those with fewer than 500 employees) and encouraging contract relationships between small businesses and universities or university personnel. The SBIR program also supports and encourages the participation of companies owned by minority and disadvantaged persons in government R&D. A typical NASA SBIR company has about 18 employees, and is located in a region that has many high-technology companies and strong scientific institutions of higher education.

SBIR is structured in three parts. Phase I is the opportunity to establish the feasibility and technical merit of a proposed innovation and the desirability of its continued development. Selected competitively, Phase I contracts are for a period of six months and normally do not exceed \$50,000.

EQUIPMENT LOANS

Certain NASA-held items of equipment may be made available to organizations, private individuals, corporations, or other entities provided the loan of such equipment is in the public interest and advantageous to NASA. Equipment is loaned on a temporary basis, usually for a period of a year or less, and is to be used exclusively for the conduct of official business. Requests for an equipment loan must be

Phase II is the major R&D effort in SBIR. The most promising Phase I projects, about 40 percent, are selected to receive contracts worth up to \$500,000 and lasting up to two years.

Phase III is the process of completing the development of a product or process to make it marketable. In Phase III, the funding, which cannot come from SBIR, comes usually from the private sector.

For more information:

Mr. Harry W. Johnson
Director
Small Business Innovation Research
Mail Code CR
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-1989

referred to the NASA installation Supply and Equipment Management Officer. (See Appendix F.) Requests should be made in advance to permit review and approval of the request, and preparation of documentation. The process of lending equipment requires the recipient to submit to NASA the results of the research conducted.

RESOURCES: HIGHER EDUCATION

MD

The Master Directory (MD) is a free, on-line multidisciplinary directory of data sets that are of potential interest to the Earth and space sciences research community. The primary contents of the MD are descriptions of data sets, not the data sets themselves. The intent of MD is to be a first pointer to a wide variety of data. Consequently, uniformity across all the descriptions is only loosely defined. One directory entry may point to a small but unique data set while another may point to an aggregate of many similar data sets. The information from which the directory entries are constructed also varies widely; thus, some directory entries are much more expansive than others. However, every entry lists a person or institution to contact for more information. MD is an excellent source of leads to data sets. Furthermore, MD

provides automatic connections called LINKS to a number of data systems such as the NASA Climate Data System (NCDS), the Pilot Land Data System (PLDS), and others.

For more information:

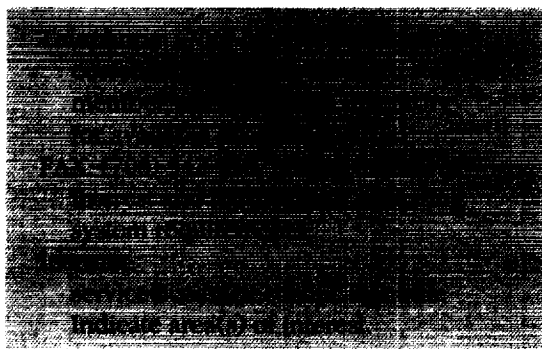


COSMIC

High performance computer programs from NASA are often the result of major, multi-year research projects. NASA's Computer Software Management and Information Center (COSMIC) is the location and distribution point for all computer software developed under NASA funding. Most programs come with the source code so that the condensed technology can be used as a basis for further research. Individual computer programs are written for a variety of computers, from workstations to supercomputers, and are individually priced. There is no charge for programs used in support of a NASA project, and significant discounts apply to software used for instruction or unfunded research. Free services include a monthly e-mail mailing list of new program releases, a

subscription to COSMIC's quarterly newsletter, and electronic access to the annual software catalog.

For more information:



NASA SCIENTIFIC AND TECHNICAL INFORMATION (STI) PROGRAM

The Space Act of 1958 required the widest appropriate dissemination of NASA research and development results. The NASA Scientific and Technical Information (STI) Program was established in response to this requirement. The STI Program provides users access to the largest collection of aeronautical and aerospace information in the world, with a database of more than three million items of interest to NASA personnel and contractors, universities in the U.S. and around the world, other government agencies, and their contractors and international partners. NASA employees, contractors, and grant recipients can access the STI database through NASA's RECON (REsearch CONnection), a bibliographic information retrieval system available throughout the domestic aerospace community. In addition, NASA's Aerospace Database, a subset of the information on RECON, is available to the public through the DIALOG information service.

Members of the aerospace community may qualify to register for STI Program services and products, including NASA research reports and customized bibliographic data.

Scientific and Technical Aerospace Reports (STAR) is an abstract journal, listing citations with abstracts for aerospace-related reports obtained from worldwide sources. STAR is issued twice each month and announces current documents that have been entered into the NASA STI database during the previous two weeks. The reports are of the following types:

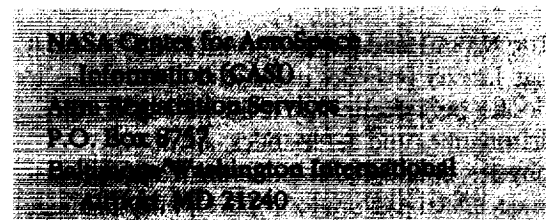
- NASA, NASA contractor, and NASA grantee reports;
- Reports issued by other U.S. Government agencies, domestic

and foreign institutions, universities, and private firms;

- Translations in report form;
- NASA-owned patents and patent applications;
- Other U.S. Government agency and foreign patents and patent applications;
- Domestic and foreign dissertations and theses.

Journal, book, and conference literature, journal translations, and certain foreign dissertations having the same subject scope as STAR are announced in a companion journal, International Aerospace Abstracts (IAA). IAA is issued twice each month and is available from the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th floor, New York, NY 10019.

Call the NASA STI Program Help Desk at (301) 621-0390, or write:



For more information:



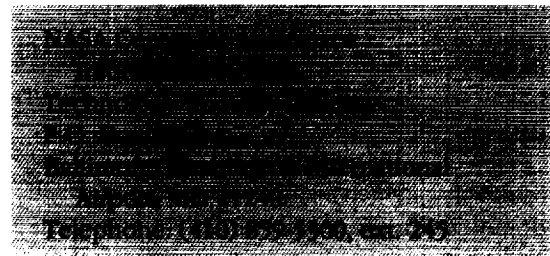
NASA TECH BRIEFS AND *SPINOFF*

NASA's research and development activities have produced thousands of technical innovations. Items which show commercial promise are published as Tech Briefs. The NASA Tech Briefs journal is organized into nine technical categories: Electronic Components and Circuits, Electronic Systems, Physical Sciences, Materials, Life Sciences, Mechanics, Machinery, Fabrication, Technology and Mathematics, and Information Sciences. A subject index is contained in each issue. NASA Tech Briefs are available monthly at no charge from the NASA Center for AeroSpace Information (CASI). To receive NASA Tech Briefs regularly, return the completed qualification form included with the journal.

In addition to Tech Briefs, CASI publishes *Spinoff*, a report which presents representative samplings of spinoff products and processes

that have resulted from technology utilization or secondary application. A mailing list for *Spinoff* is not maintained; however, the annual report may be requested from CASI in December.

To obtain a recent issue of NASA Tech Briefs, the annual issue of *Spinoff*, or for more information on NASA's technology transfer program:



NASA LIBRARY

The NASA Headquarters Science and Technology Library provides users with rapid access to books, periodicals, and technical reports on astronautics and aeronautics, astronomy, physics, chemistry, engineering, computer science, space exploration, space policy, management, and business. In addition, the library provides special user services, including reference and research assistance, database searches, circulation privileges, and interlibrary loans.

The library provides basic reference services for all library users, including information about the library and its resources, quick answers to factual questions, citation verification, and directional assistance. Services are

provided in person or by telephone. The library is open to the public; however, non-NASA personnel may not check out materials. Furthermore, policies regarding the direct use of library materials by members of the general public vary by center. See Appendix G for NASA libraries.

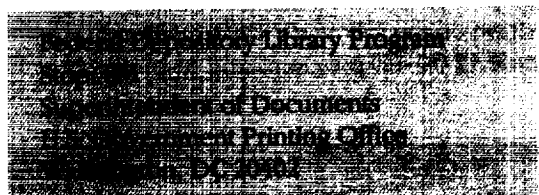
NASA Headquarters and field installation libraries cooperate with university libraries through the On-Line Computer Library Center (OCLC), a computerized catalog of NASA materials. Contact your university librarian for more information.

FEDERAL DEPOSITORY LIBRARY PROGRAM

The Federal Depository Library Program was established by Congress to provide free public access to Government publications. Nearly 1400 public, academic, state, and law libraries serve as an information link with NASA and other Federal agencies by maintaining collections of government publications. These collections, which are tailored to local needs, are open to the public. Fifty-three of the libraries are designated as regional depository libraries. They have the responsibility of retaining material permanently and providing inter-library loan and reference services in their regions.

They also assist the other depository libraries with the disposal of obsolete material.

To obtain a complete listing of all depository libraries, write to:

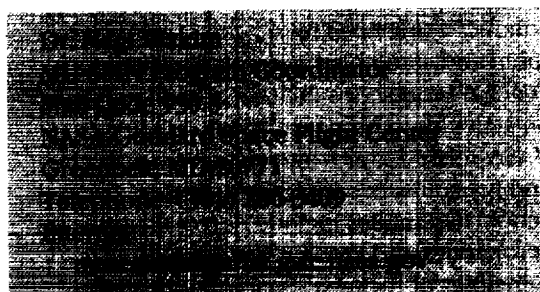


MINORITY UNIVERSITY-SPACE INTERDISCIPLINARY NETWORK

The Minority University-Space Interdisciplinary Network (MU-SPIN) Program was developed by the National Space Science Data Center to institute a major networking and education initiative for HBCUs, OMUs, and other institutions with large minority student enrollments. MU-SPIN is sponsored by a number of NASA Headquarters and field center offices and the National Science Foundation. The program's primary goal is to interconnect the computing facilities of HBCUs and OMUs with the NASA Science Internet and to promote awareness and usage of wide area networking technology in support of collaborative interdisciplinary scientific research among faculty and students and NASA scientists. Staff, faculty, and students

of HBCUs and OMUs are encouraged to inquire about the MU-SPIN Program and to participate in its activities.

For more information:



RESOURCES: ELEMENTARY AND SECONDARY EDUCATORS AND COLLEGES OF EDUCATION

This brochure has thus far focused on programs of interest to undergraduate, graduate, and post-graduate students and faculty. Information on the following Kindergarten through grade 12 (K-12) programs and resources is

provided to assist elementary and secondary educators, students and faculty at Colleges of Education, and institutions interested in implementing or enhancing public service and outreach programs.

ELEMENTARY AND SECONDARY EDUCATION

The NASA Education Division, Elementary and Secondary Branch, focuses its attentions on the special needs of elementary and secondary students and teachers through a number of programs, including the Aerospace Education Services Program (AESP), the NASA Educational Workshops for Elementary School Teachers (NEWEST), NASA Educational Workshops for Math, Science and Technology Teachers (NEWMAST) and the Space Science Student Involvement Program (SSIP). AESP specialists conduct workshops for teachers, and classroom and assembly programs for students. Teacher workshops include how-to and hands-on activities to help teachers incorporate NASA-related topics into classroom activities and programs to supplement existing curricula. School assemblies include demonstrations of aeronautics and space science equipment, principles of rocketry, Space Shuttle opera-

tions, and life in space. NEWEST, for teachers of grades K-6, and NEWMAST for teachers of grades 7-12, offer educators the opportunity to attend a two-week summer workshop at a NASA field center and to interact directly with NASA scientists and engineers. Aerospace education specialists help participants translate this experience into classroom activities.

For more information on these and other programs:

Elementary and Secondary Branch
Education Division
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-1315

NASA SELECT

Since the early 1980s, NASA Select has been recognized for its live mission coverage, often used by network television. In addition to live liftoff-to-landing coverage of Shuttle missions, NASA Select now offers informational and educational programming on space and related topics. Historical documentaries on the U.S. space program will be presented along with data received from Galileo, Magellan, Ulysses, the Hubble Space Telescope (HST), the Cosmic Background Explorer (COBE), and Mars Observer, as well as future missions. Programming starts at noon Eastern time, Monday through Friday, and is shown in four-hour blocks, to be repeated at 4:00 p.m., 8:00 p.m., and midnight. The 2:00 p.m. program

(shown again at 6:00 p.m., 10:00 p.m. and 2:00 a.m.) contains educational material suitable for classroom use. NASA Select is transmitted on SatCom F2R, transponder 13, C band, 72 degrees West longitude, frequency 3954.5 MHz vertical polarization, audio on 6.8 MHz.

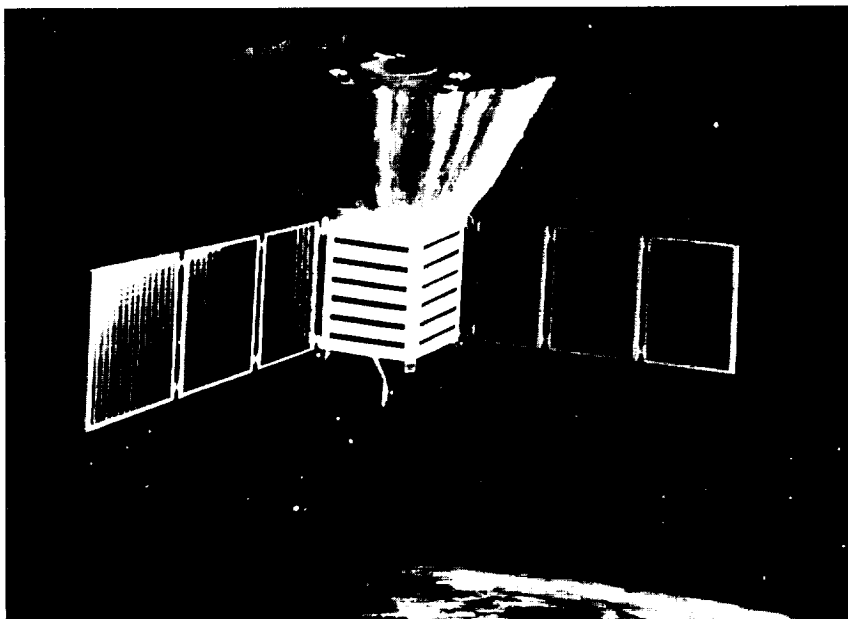
For more information, write:

**NASA Select
Technology and Evaluation Branch
Education Division
NASA Headquarters
Washington, DC 20546**

NASA TEACHER RESOURCE CENTER NETWORK

Teachers need access to the information generated by NASA programs, technologies, and discoveries for use in the classroom. NASA educational materials are a valuable supplement to textbook instruction. To help disseminate these materials to educators of all levels,

from kindergarten to graduate school, NASA's Education Division established the NASA Teacher Resource Center Network, comprised of Regional Teacher Resource Centers, Teacher Resource Centers, and the Central Operation of Resources for Educators.



Artist rendering of Cosmic Background Explorer (COBE). The COBE was launched from Vandenberg Air Force Base on board a Delta launch vehicle into a 560-mile high polar orbit on November 18, 1989. Although COBE has depleted its liquid-helium sensor coolant, COBE has given us an unexpected wealth of information on the nature, structure, and age of the universe.

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NASA TEACHER RESOURCE CENTERS

NASA Regional Teacher Resource Centers (RTRCs) provide elementary, secondary, and university educators with a source of aerospace materials suitable for use in the classroom. Materials include video tapes, slide sets and filmstrip programs, audio cassettes, and lesson plans. These materials span the following curriculum areas: aeronautics, astronomy, computer science, Earth resources, energy, environment, life science, mathematics, physical science, and planetary science. Universities, museums, and other educational institutions serve as RTRCs, where teachers may preview and obtain copies of NASA materials.

NASA Teacher Resource Centers (TRCs) are located at the NASA field centers; Dryden Flight Research Facility, Edwards, California;

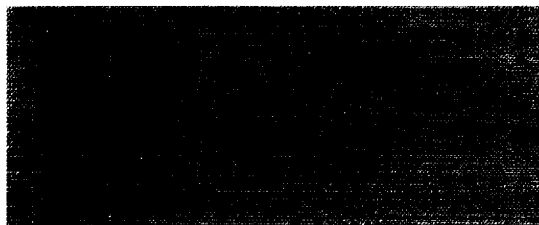
Wallops Flight Facility, Wallops Island, Virginia; and at the Tri-State Learning Center, Tishomingo, Mississippi. TRCs have a variety of NASA-related educational materials: video tapes, audio tapes, slides, publications, lesson plans, and classroom activities. Educators can preview and obtain copies of materials at these centers.

For more information, write:



CENTRAL OPERATION OF RESOURCES FOR EDUCATORS

The Central Operation of Resources for Educators (CORE) distributes aerospace education materials both to national and international educators. CORE provides educators with another source for NASA educational audiovisual materials and will process teacher requests by mail for a nominal fee. On school letterhead, educators can request a catalog and order form from:



SPACELINK

NASA Spacelink is a collection of NASA information and educational materials stored on a computer at the Marshall Space Flight Center in Huntsville, Alabama. The system may be accessed over regular telephone lines or through the Internet and is designed to communicate with a wide variety of computers and modems, especially those most commonly found in classrooms and homes. NASA does not charge for use of the system; however, calls from outside the Huntsville local dialing area usually will be subject to long distance toll charges or network access fees. Users can access data on:

- Current NASA News – Information on NASA educational workshops for teachers, news releases, Shuttle status reports, space probe status reports, and the Shuttle launch schedule and flight activities;
- Aeronautics – Information on current and past NASA research in aeronautics;
- Space Exploration: Before the Shuttle – Historical information on the U.S. Space Program, including the Mercury, Gemini, Apollo, and Skylab programs and unmanned missions;
- Space Exploration: The Shuttle and Beyond – Information on the Space Shuttle and Shuttle payloads, Space

Station *Freedom*, astronauts, planetary probes, space observatories, and satellites;

- NASA Field Centers – Overviews of the responsibilities and resources of all the NASA centers;
- NASA Educational Services – A listing of all the major NASA educational programs;
- Classroom Materials – Information useful in the classroom, including space science lesson plans and activities for grades K–12;
- Space Program Spinoffs/Technology Transfer – Reports on the ways in which NASA research has been adapted to benefit industry and the public.



For more information, write:



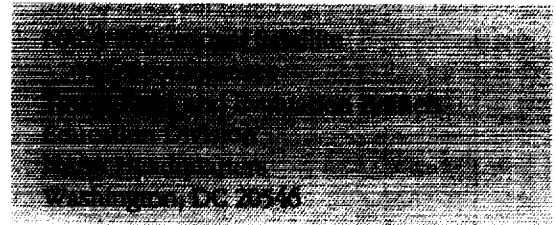
EDUCATIONAL SATELLITE VIDEOCONFERENCES

Each year, thousands of elementary and secondary teachers, and those majoring in elementary and secondary education, enhance their professional skills by participating in conferences with NASA astronauts, Space Station planners, scientists, and other aerospace educational specialists via communication satellites. Schools with a C-Band satellite dish can receive NASA Educational Videoconferences. Specific information regarding telecast times and channels can be obtained by registering as a viewing site. There is no charge for registration or participation in the videoconference. Permission to videotape is granted to registered schools so that tapes may be shared with other schools.

For more information or to register for NASA Educational Videoconferences:



Or write:



A modified F-18 in a program obtaining information about high angle of attack (AOA). Data from the F-18 high AOA program are producing information to validate computer codes and wind tunnel results and could lead to design methods providing better performance in future aircraft.



National Aeronautics and Space Administration

EDUCATIONAL PUBLICATIONS

NASA produces educational and technical publications for educators, students, and the general public through its Educational Publications Branch of the Education Division. Publications include:

- Educational Briefs, designed to provide educators and students with information about NASA's aerospace activities and space missions, and targeted toward a specific grade level or segment of the educational community;
- NASA Facts, detailed materials that discuss a mission, an activity, or program in depth;
- Educational publications that enrich curricula, explain discipline areas by illustrating the connection between aeronautics and space science concepts with those taught in the classroom;
- NASA Publications, detailed information about NASA missions and programs for the general public;
- Lithographs, which provide a photograph or image on one side of the

document and explanatory text on the other. Lithographs are designed for specific audiences;

- Pamphlets, including reprints, bibliographies, and career information, and educational pamphlets with specific programs that can be incorporated into classroom activities;
- Wall sheets, large, full-color informational images for the classroom.

Materials are available through the Teacher Resource Center Network, NASA Spacelink, and NASA Headquarters.

For more information, see sections under Teacher Resource Center Network and Spacelink, or contact:

Educational Publications Branch
Education Division
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-1554

STUDENT EMPLOYMENT PROGRAMS

Each NASA installation conducts a number of programs which provide employment opportunities in science and engineering fields for students in high school, college, and graduate school. U.S. citizenship is usually required to participate in these programs.

All hiring of technical personnel is conducted by the individual field centers. Consequently,

center personnel occasionally visit college campuses to recruit talented scientists and engineers. Positions often are filled based on the student's academic credentials and no Civil Service tests are administered. Students interested in working for NASA should contact their college or university placement office to determine when such visits are being conducted.

COOPERATIVE EDUCATION PROGRAM

The Cooperative Education (Co-op) Program, administered by each of NASA's field centers, combines academic studies with on-the-job training and experience, and provides exposure to career options and the work performed by NASA. The Co-op Program gives high school students, and undergraduate and graduate students, an opportunity to work at a NASA field center while completing their education. Work schedules are flexible and correspond with semesters, quarters, or trimesters. Students generally alternate a period of work with school, but assignments may not be confined to summers or vacation periods. Graduates are

eligible for permanent employment after they satisfactorily complete educational requirements and required work assignments.

Students interested in participating in the Co-op Program should first contact their college or university career placement or co-op office to determine if their school has a co-op agreement with a NASA field center. If the school does not have an agreement, the school's representative should contact the Personnel Office at the field center(s) of interest. (See Appendix H.)

FEDERAL JUNIOR FELLOWSHIP PROGRAM

The Federal Junior Fellowship Program (FJF) is designed to provide career-related employment for students pursuing a bachelor's degree. FJF gives the student an opportunity to earn money for college while learning about his or her chosen career through work-related experience. Junior fellows may work part-time and during summer and college vacation peri-

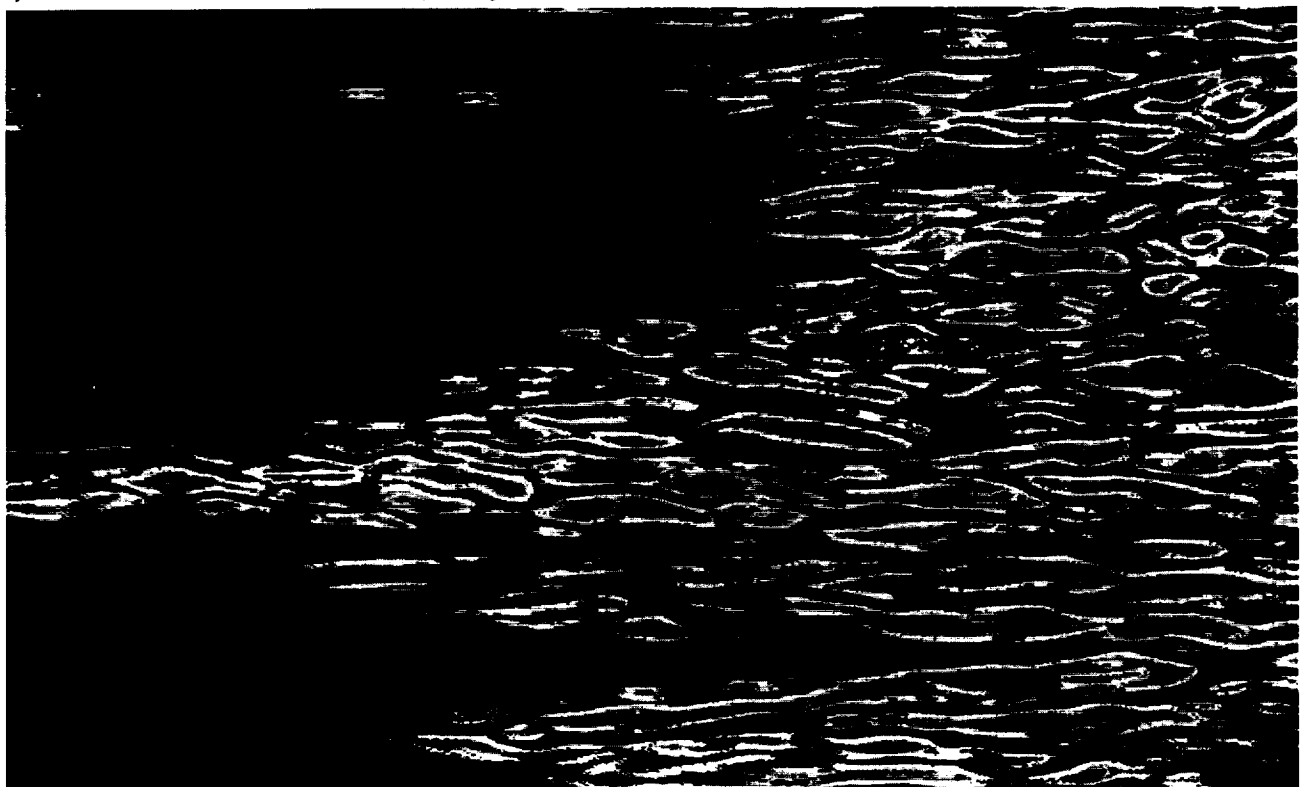
ods. Interested high school seniors who meet financial-need criteria should see their high school guidance counselor for more information. Counselors unfamiliar with the program may contact the Personnel Office at the NASA installation in the appropriate geographic area listed in Appendix H.

STAY-IN-SCHOOL PROGRAM

The Stay-in-School Program provides paid employment to students who are at least 16 years of age, enrolled or accepted for enrollment on a full-time basis in high school, vocational school, or a bachelor's program, and meet financial-need criteria. Students may

work up to 20 hours per week on a part-time basis and full time when school is officially closed. Interested students should contact the Personnel Office at the NASA installation in the appropriate geographic area listed in Appendix H.

NASA strongly supports research to advance the critical disciplines important to aviation. The emphasis is on fundamental understanding of the physical phenomena involved in aerospace systems and on identifying and developing new ideas that may yield revolutionary advances for application to those systems. Shown here is a direct numerical simulation predicting transition from laminar to turbulent flow over a flat plate.



APPENDIX A: NASA FIELD CENTERS

NASA's field centers participate in implementing the programs described in this brochure. In addition, because each center plays a specific role in carrying out NASA's research and development mission, additional university programs not outlined here are conducted to meet local or regional needs. For information about these programs, contact the University Affairs Officer at the appropriate field center listed below:

University Affairs Officer
Code 241-3
NASA Ames Research Center
Moffett Field, CA 94035
Telephone: (415) 604-5624

University Affairs Officer
Mail Stop 600
NASA Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: (301) 286-9690

University Affairs Officer
Jet Propulsion Laboratory 180-900
4800 Oak Grove Drive
Pasadena, CA 91109
Telephone: (818) 354-8251

University Affairs Officer
Mail Stop AHU
NASA Johnson Space Center
Houston, TX 77058
Telephone: (713) 483-4724

University Affairs Officer
Mail Code PT-PAS
NASA Kennedy Space Center
KSC, FL 32899
Telephone: (407) 867-2512

University Affairs Officer
Mail Stop 105-A
NASA Langley Research Center
Hampton, VA 23665
Telephone: (804) 864-6058

University Affairs Officer
Mail Stop 3-7
NASA Lewis Research Center
21000 Brookpark Road
Cleveland, OH 44135
Telephone: (216) 433-2956

University Affairs Officer
Mail Stop DS01
NASA Marshall Space Flight Center
MSFC, AL 35812
Telephone: (205) 544-0997

University Affairs Officer
Science and Technology Branch
Mail Code HA10
NASA Stennis Space Center
SSC, MS 39529
Telephone: (601) 688-3830

APPENDIX B: CENTER RESEARCH AND TECHNOLOGY REPORTS

Mail Code 200-1
NASA Ames Research Center
Moffett Field, CA 94035
Telephone: (415) 604-5113

Mail Code 160
NASA Goddard Space Flight Center
Greenbelt Road
Greenbelt, MD 20771
Telephone: (301) 286-6990

Jet Propulsion Laboratory 180-21
4800 Oak Grove Drive
Pasadena, CA 91109
Telephone: (818) 354-7006

Mail Code IA4
NASA Johnson Space Center
Houston, TX 77058
Telephone: (713) 283-5875

Mail Code PT-AST
NASA Kennedy Space Center
KSC, FL 32899
Telephone: (407) 867-2780

Mail Stop 105-A
NASA Langley Research Center
Hampton, VA 23665
Telephone: (804) 864-6058

Office of Interagency and Industry
Programs
Mail Stop 3-17
NASA Lewis Research Center
21000 Brookpark Road
Cleveland, OH 44135
Telephone: (216) 433-5382

Mail Code FR41
NASA Marshall Space Flight Center
MSFC, AL 35812
Telephone: (205) 544-7239

Mail Code HA00 Building 1100
NASA Stennis Space Center
SSC, MS 39529
Telephone: (601) 688-1932

APPENDIX C: UNSOLICITED PROPOSALS

To obtain the booklet, "Guidance for the Preparation and Submission of Unsolicited Proposals," or to submit an unsolicited proposal, contact the following:

University Affairs Branch
Mail Stop 241-1
NASA Ames Research Center
Moffett Field, CA 94035-1000
Telephone: (415) 604-5802

University Programs Officer
Mail Code 286
NASA Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: (301) 286-8511

Proposal Processing Group
Mail Code SPM-20
Office of Space Science and
Applications
NASA Headquarters
Washington, DC 20546
Telephone: (202) 479-4480

Manager, Contract Capabilities Office
Jet Propulsion Laboratory 190-205
4800 Oak Grove Drive
Pasadena, CA 91109
Telephone: (818) 354-2121

Unsolicited Proposal Officer
Mail Code BD 35
NASA Johnson Space Center
Houston, TX 77058
Telephone: (713) 483-4512

Procurement Analyst
Mail Code OP-AMS
NASA Kennedy Space Center
KSC, FL 32899
Telephone: (407) 867-7353

Grants, Supply and Construction
Contracts Branch
Mail Stop 126
NASA Langley Research Center
Hampton, VA 23665-5225
Telephone: (804) 864-2418

Grants Officer
Mail Stop 500-315
NASA Lewis Research Center
21000 Brookpark Road
Cleveland, OH 44135
Telephone: (216) 433-2781

Procurement Analyst
Mail Code AP16
NASA Marshall Space Flight Center
MSFC, AL 35812
Telephone: (205) 544-0382

Chief, Procurement Management
Support Division
Mail Code DA30
NASA Stennis Space Center
SSC, MS 39529
Telephone: (601) 688-1636

APPENDIX D: OAST UNIVERSITY SPACE ENGINEERING RESEARCH CENTERS

Dr. Fred R. DeJarnette
North Carolina State University at
Raleigh
Mars Mission Research Center
Mechanical and Aerospace
Engineering
Campus Box 7921
Raleigh, NC 27695-7921
Telephone: (919) 515-5931

Dr. Gary K. Maki
University of Idaho
Space Engineering Research Center for
Very Large Scale Integrated (VLSI)
System Design
College of Engineering
Moscow, ID 83843
Telephone: (208) 885-6500

Dr. Fawwaz T. Ulaby
University of Michigan
Center for Space Terahertz
Technology
3228 EECS Building
Ann Arbor, MI 48109
Telephone: (313) 764-0501

Dr. Larry P. Cooper
University of Cincinnati
Space Engineering Center for System
Health Management Technologies
College of Engineering - ML 343
Cincinnati, OH 45221-0343
Telephone: (513) 556-6272

Dr. Charles L. Merkle
Pennsylvania State University
Propulsion Engineering Research
Center
Mechanical Engineering Department
University Park, PA 16802
Telephone: (814) 863-1501

Dr. Terry Triffet
University of Arizona
Center for the Utilization of Local
Planetary Resources (SERC/CULPR)
4717 East Fort Lowell
Tucson, AZ 85712
Telephone: (602) 322-2304

Dr. Edward F. Crawley
Massachusetts Institute of Technology
Space Engineering Research Center
(SERC)
Department of Aeronautics and
Astronautics
Room 37-341
77 Massachusetts Avenue
Cambridge, MA 02139
Telephone: (617) 253-7510

Dr. Renjeng Su
University of Colorado at Boulder
Center for Space Construction
College of Engineering and Applied
Sciences
Campus Box 529
Boulder, CO 80309
Telephone: (303) 492-2556

APPENDIX E: CENTERS FOR THE COMMERCIAL DEVELOPMENT OF SPACE

RESEARCH AREA: AUTOMATION AND ROBOTICS

Dr. David Conrad
Director
Space Automation and Robotics Center
(SpARC)
Environmental Research Institute of
Michigan (ERIM)
P.O. Box 134001
Ann Arbor, MI 48113-4001
Telephone: (313) 994-1200 Ext. 2233

Dr. Neal Duffie
Director
Wisconsin Center for Space
Automation and Robotics (WCSAR)
University of Wisconsin-Madison
1357 University Avenue
Madison, WI 53715-1020
Telephone: (608) 262-5524

RESEARCH AREA: REMOTE SENSING

Dr. John Bossler
Director
Center for Mapping
Ohio State University
1216 Kinnear Road
Columbus, OH 43212
Telephone: (614) 292-6642

Dr. George May
Director
ITD Space Remote Sensing Center
Building 1103, Suite 118
Stennis Space Center, MS 39529
Telephone: (601) 688-2509

RESEARCH AREA: BIO-MEDICINE/BIO-TECHNOLOGY

Dr. Marvin Luttges
Director
BioServe Space Technologies
Dept. of Aerospace Engineering
Sciences
Campus Box 429
University of Colorado-Boulder
Boulder, CO 80309
Telephone: (303) 492-7613

Dr. Charles E. Bugg
Director
Center for Macromolecular
Crystallography (CMC)
Box 79 - THT, UAB Station
University of Alabama at Birmingham
Birmingham, AL 35294-0005
Telephone: (205) 934-5329

Dr. Wesley Hymer
Director
Center for Cell Research (CCR)
204 South Frear Laboratory
Pennsylvania State University
University Park, PA 16802
Telephone: (814) 865-2407

RESEARCH AREA: MATERIALS PROCESSING IN SPACE

Mr. Frank Jelinek
Director
Advanced Materials Center
Battelle
505 King Avenue
Columbus, OH 43201-2693
Telephone: (614) 424-6376

Dr. William Wilcox
Director
Center for Commercial Crystal Growth
in Space
NASA Center for Crystal Growth
Clarkson University
103 CAMP Building
Potsdam, NY 13699-5665
Telephone: (315) 268-6446

Dr. Charles Lundquist
Director
Consortium for Materials Development
in Space (CMDS)
Research Institute Building
4701 University Drive
University of Alabama in Huntsville
Huntsville, AL 35899
Telephone: (205) 895-6620

Dr. Alex Ignatiev
Director
Space Vacuum Epitaxy Center
Science and Research Building One
4800 Calhoun Road
University of Houston
Houston, TX 77204-5507
Telephone: (713) 749-3701

RESEARCH AREA: SPACE POWER

Dr. A.D. Patton
Director
Center for Space Power
223 Wisenbaker Engineering Research
Center
Texas A&M University
College Station, TX 77843-3118
Telephone: (409) 845-8768

RESEARCH AREA: SPACE POWER AND ADVANCED ELECTRONICS

Dr. Raymond Askew
Director
Center for the Commercial
Development of Space Power and
Advanced Electronics
Space Power Institute
Auburn University
Auburn, AL 36849-5320
Telephone: (205) 844-5894

RESEARCH AREA: SPACE PROPULSION

Dr. George Garrison
Executive Director
Center for Space Transportation and
Applied Research (CSTAR)
UT-Calspan Center for Aerospace
Research
University of Tennessee Space
Institute
P.O. Box 850
Tullahoma, TN 37388-8897
Telephone: (615) 454-9294

RESEARCH AREA: SPACE STRUCTURES

Dr. Eric Baer
Director
Center for Materials for Space
Structures
White Building, Room 219
Case Western Reserve University
10900 Euclid Avenue
Cleveland, OH 44106
Telephone: (216) 368-4203

RESEARCH AREA: COMMUNICATIONS

Dr. John S. Baras
Co-Director
Center for Satellite and Hybrid
Communication Networks
A.V. Williams Building
University of Maryland Systems
Research Center
College Park, MD 20742
Telephone: (301) 405-6606

Dr. William Glenn
Director
Center for Space Communications
Technology
Space Communications Technology
Center (SCTC)
Florida Atlantic University Research
Corporation
Boca Raton, FL 33431
Telephone: (407) 367-3411

APPENDIX F: EQUIPMENT LOANS

Supply and Equipment Management
Officer
Mail Code AE/255-1
NASA Ames Research Center
Moffett Field, CA 94035
Telephone: (415) 604-5668

Supply and Equipment Management
Officer
Mail Stop 235
NASA Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: (301) 286-5733

Supply and Equipment Management
Officer
Mail Code BE
NASA Headquarters
Washington, DC 20546
Telephone: (202) 453-1810

Supply and Equipment Management
Officer
Jet Propulsion Laboratory 180-801
4800 Oak Grove Drive
Pasadena, CA 91109
Telephone: (818) 354-4970

Supply and Equipment Management
Officer
Mail Stop JF/J
NASA Johnson Space Center
Houston, TX 77058
Telephone: (713) 483-6519

Supply and Equipment Management
Officer
Mail Code SI-SAT-I
NASA Kennedy Space Center
KSC, FL 32899
Telephone: (407) 867-4403

Supply and Equipment Management
Officer
Mail Stop 377
NASA Langley Research Center
Hampton, VA 23665
Telephone: (804) 864-2051

Supply and-Equipment Management
Officer
Mail Stop 21-9
NASA Lewis Research Center
21000 Brookpark Road
Cleveland, OH 44135
Telephone: (216) 433-3067

Supply and Equipment Management
Officer
Mail Stop CN41
NASA Marshall Space Flight Center
MSFC, AL 35812
Telephone: (205) 544-3984

Supply and Equipment Management
Officer
Mail Code GA30
NASA Stennis Space Center
SSC, MS 39529
Telephone: (601) 688-2144

APPENDIX G: NASA LIBRARIES

Main Library, Mail Code 202-3

or

Life Sciences Library

Mail Code 239-13

NASA Ames Research Center

Moffett Field, CA 94035

Telephone:

(415) 694-5157 (main library)

(415) 694-5387 (life sciences)

Attn: Library

Mail Code 2151

Hugh L. Dryden Flight Research Facility

P.O. Box 273

Edwards, CA 93523

Telephone: (805) 258-3311,

ext. 3702 or 3127

Attn: Library

Mail Code 252

NASA Goddard Space Flight Center

Greenbelt, MD 20771

Telephone: (301) 286-7217

Attn: Library

Room 1J20

Mail Code JBD-3

NASA Headquarters

Washington, DC 20546

Telephone: (202) 358-0168

Attn: Library

Jet Propulsion Laboratory 111-113

4800 Oak Grove Drive

Pasadena, CA 91109

Telephone: (818) 354-3840

Attn: Tech. Library

Mail Code JM2

NASA Johnson Space Center

Houston, TX 77058

Telephone: (713) 483-4248

Attn: Library-A

NASA Kennedy Space Center

KSC, FL 32899

Telephone: (407) 867-2602

Attn: Library

Mail Stop 185

NASA Langley Research Center

Hampton, VA 23665

Telephone: (804) 864-2354

Attn: Library

Interlibrary Loan

NASA Lewis Research Center

21000 Brookpark Road

Cleveland, OH 44135

Telephone: (216) 433-5779

Attn: Library

Mail Code CN22

NASA Marshall Space Flight Center

MSFC, AL 35812

Telephone: (205) 544-4525

Bldg. 1100, Room 5-170A

NASA Stennis Space Center

SSC, MS 39529-6000

Telephone: (601) 688-3244

Technical Library

Mail Code 250.9

Wallops Flight Facility

Wallops Island, VA 23337

Telephone: (804) 824-1092

APPENDIX H: NASA PERSONNEL OFFICES

Personnel Office
Mail Code 241-6
NASA Ames Research Center
Moffett Field, CA 94035
Telephone: (415) 604-5084

Personnel Office
Mail Code 115
NASA Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: (301) 286-8208

Personnel Office
Mail Code FPH
NASA Headquarters
Washington, DC 20546
Telephone: (202) 358-1562

Personnel Office
Mail Code AH6
NASA Johnson Space Center
Houston, TX 77058
Telephone: (713) 483-8414

Recruitment and Placement Office
Jet Propulsion Laboratory 249-104
4800 Oak Grove Drive
Pasadena, CA 91109
Telephone: (818) 354-0291

Personnel Office
Mail Code PM-STF
NASA Kennedy Space Center
KSC, FL 32899
Telephone: (407) 867-3620

Personnel Office
Mail Code 174
NASA Langley Research Center
Hampton, VA 23665
Telephone: (804) 864-2578

Personnel Office
Mail Code 500-301
NASA Lewis Research Center
21000 Brookpark Rd.
Cleveland, OH 44135
Telephone: (216) 433-2486

Personnel Office
Mail Code CM41
NASA Marshall Space Flight Center
MSFC, AL 35812
Telephone: (205) 544-7514

Personnel Office
Mail Code BA00
NASA Stennis Space Center
SSC, MS 39529
Telephone: (601) 688-2336

UNIVERSITY GUIDE TO NASA – APPENDICES

For more information about the Federal Junior Fellowship, Stay-in-School, and other employment programs, contact the NASA installation appropriate to the following geographic areas:

Contact **AMES RESEARCH CENTER** for:

Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming.

Contact **GODDARD SPACE FLIGHT CENTER** for:

Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

Contact **JOHNSON SPACE CENTER** for:

Colorado, Kansas, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, and Texas.

Contact **KENNEDY SPACE CENTER** for:

Florida, Georgia, Puerto Rico, and Virgin Islands.

Contact **LANGLEY RESEARCH CENTER** for:

Kentucky, North Carolina, South Carolina, Virginia, and West Virginia.

Contact **LEWIS RESEARCH CENTER** for:

Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

Contact **MARSHALL SPACE FLIGHT CENTER** for:

Alabama, Arkansas, Iowa, Louisiana, Missouri, and Tennessee.

Contact **STENNIS SPACE CENTER** for:

Mississippi.

APPENDIX I: ACRONYMS

ASRM	Advanced Solid Rocket Motor	GRO	Gamma Ray Observatory
AESP	Aerospace Education Services Program	GSFC	Goddard Space Flight Center
ASEE	American Society for Engineering Education	GSRP	Graduate Student Researchers Program
ARC	Ames Research Center	HBCU	Historically Black Colleges and Universities
AO	Announcement of Opportunity	HST	Hubble Space Telescope
CASI	Center for AeroSpace Information	IUE	International Ultraviolet Explorer
CCDS	Centers for the Commercial Development of Space	JPL	Jet Propulsion Laboratory
COBE	Cosmic Background Explorer	JSC	Johnson Space Center
CORE	Central Operation of Resources for Educators	JOVE	Joint Venture
COSMIC	Computer Software Management and Information Center	KSC	Kennedy Space Center
EOS	Earth Observing System	LaRC	Langley Research Center
FEDIX	Federal Information Exchange, Inc.	LeRC	Lewis Research Center
FJF	Federal Junior Fellowship	MSFC	Marshall Space Flight Center
		MD	Master Directory
		MU-SPIN	Minority University-Space Interdisciplinary Network
		NCDS	NASA Climate Data System

UNIVERSITY GUIDE TO NASA – APPENDICES

Acronyms, continued

NEWEST	NASA Educational Workshops for Elementary School Teachers	RTRC	Regional Teacher Resource Center
NEWMAST	NASA Educational Workshops for Math, Science and Technology Teachers	RTOP	Research and Technology Objectives and Plans
NRA	NASA Research Announcement	RECON	Research Connection
NACA	National Advisory Committee for Aeronautics	R&D	research and development
NASA	National Aeronautics and Space Administration	STI	Scientific and Technical Information
NASP	National Aerospace Plane	SBIR	Small Business Innovation Research
NRC	National Research Council	SSIP	Space Science Student Involvement Program
OAST	Office of Aeronautics and Space Technology	SSC	Stennis Space Center
OCP	Office of Commercial Programs	STAR	Scientific and Technical Aerospace Reports
OSSA	Office of Space Science and Applications	TRC	Teacher Resource Center
OCLC	On-line Computer Library Center	UMF	Underrepresented Minority Focus
OMU	Other Minority Universities	USRA	Universities Space Research Association
PLDS	Pilot Land Data System	UAO	University Affairs Office/Officer
		USERC	University Space Engineering Research Center



EP-287
October 1992